

MAP-21, GIS, the Road Inventory and YOU

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- **Certified Mileage is used at the state level for distribution of various taxes.**
- **Certified Mileage and HPMS data is used at the federal level for distribution of various taxes.**

Bottom line...It's all about funding.



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- What we're not going to talk about...funding.



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■ **MAP 21 major program areas¹**

- National Highway Performance Program (NHPP)
- Highway Safety Improvement Program (HSIP)
- Congestion Mitigation and Air Quality Improvement Program (CMAQ)
- Freight movement



¹ Source: <http://www.fhwa.dot.gov/tpm/about/summary.cfm>

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- **Inventory prior to MAP 21**
 - Certified Mileage – centerline only
 - HPMS data elements – 63 elements
 - Functional Classification – recently changed to 7 categories
 - National Highway System – as existed for previous decade
 - National Truck Network – as established by ISTEA in 1991



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- **MAP 21 and the National Highway System**
 - Enhanced National Highway System¹ (eNHS)
 - One time mass additions
 - Not repetitive (no automatic additions)
 - HPMS increased to 69 data elements
 - Pavement condition
 - Physical attribution



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■ Brief description of the inventory

- State Operating Authority IAC 8-23-15-1, 2, 3 and 4 – Local Road and Street Inventory
 - Sec. 1. The department shall periodically inventory the mileage and use of the local road systems under the jurisdiction of the counties and the street systems under the jurisdiction of municipalities. As added by P.L.18-1990, SEC.224.
 - **Sec. 4. The department shall use the inventory developed under this chapter in its annual certification of county road mileage. As added by P.L.18-1990, SEC.224.**
- Federal Operating Authority 23 CFR 460.1, .2, .3
 - **§ 460.3 Procedures** - (a) *General requirements.* 23 U.S.C. 402(c) provides that funds authorized to carry out section 402 shall be apportioned according to a formula based on population and public road mileage of each State. Public road mileage shall be determined as of the end of the calendar year preceding the year in which the funds are apportioned and shall be certified to by the Governor of the State or his designee and subject to the approval of the Federal Highway Administrator.



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- **INDOT inventory**
 - Centerlines
 - Dual carriageway representation
 - Intersection identification
 - Traffic sections
 - Physical attribution
 - Administrative attribution



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- **Currently transitioning software**
 - Third transition in my career
 - Mainframe with hand-drawn maps
 - Exor – oracle db with GIS maps
 - ESRI Roads & Highways – fully GIS



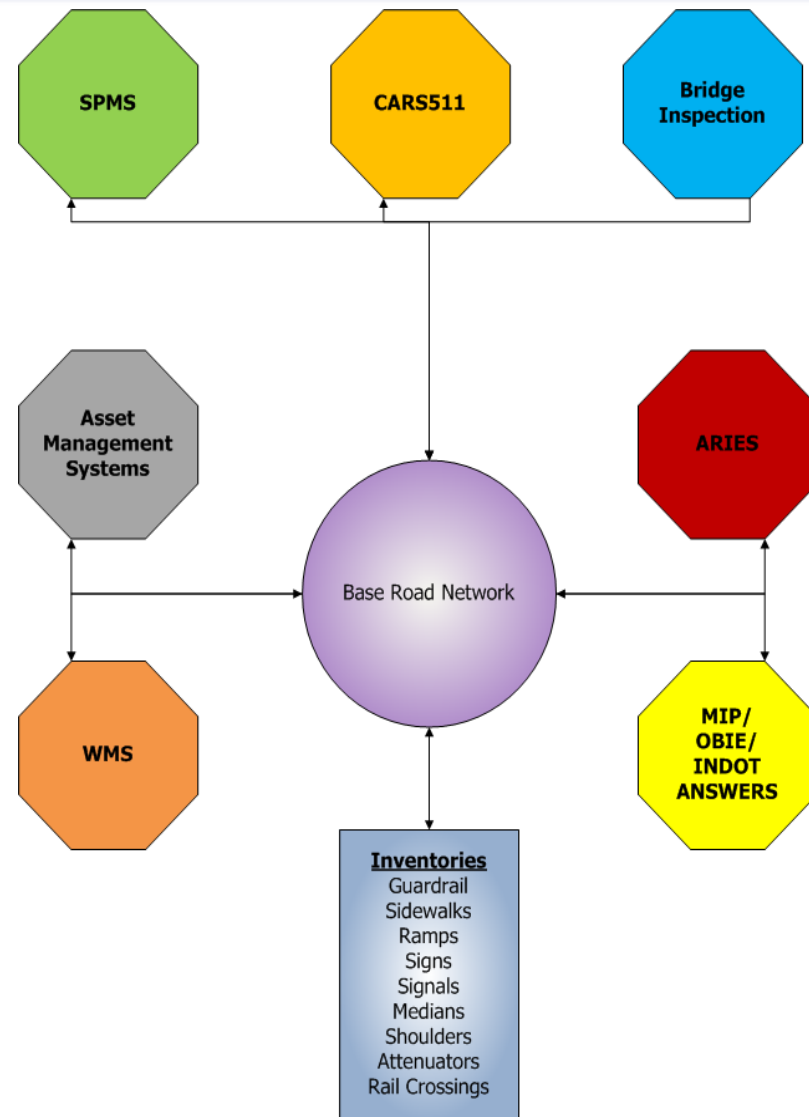
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- **Inventory processes**
 - New Software – ESRI Roads and Highways
 - Developing **Internet** interface
 - Online submittals of new roads
 - Online submittals of annexations
 - Online change requests (FC, NHS, NTN)
 - Online inventory attribution change requests



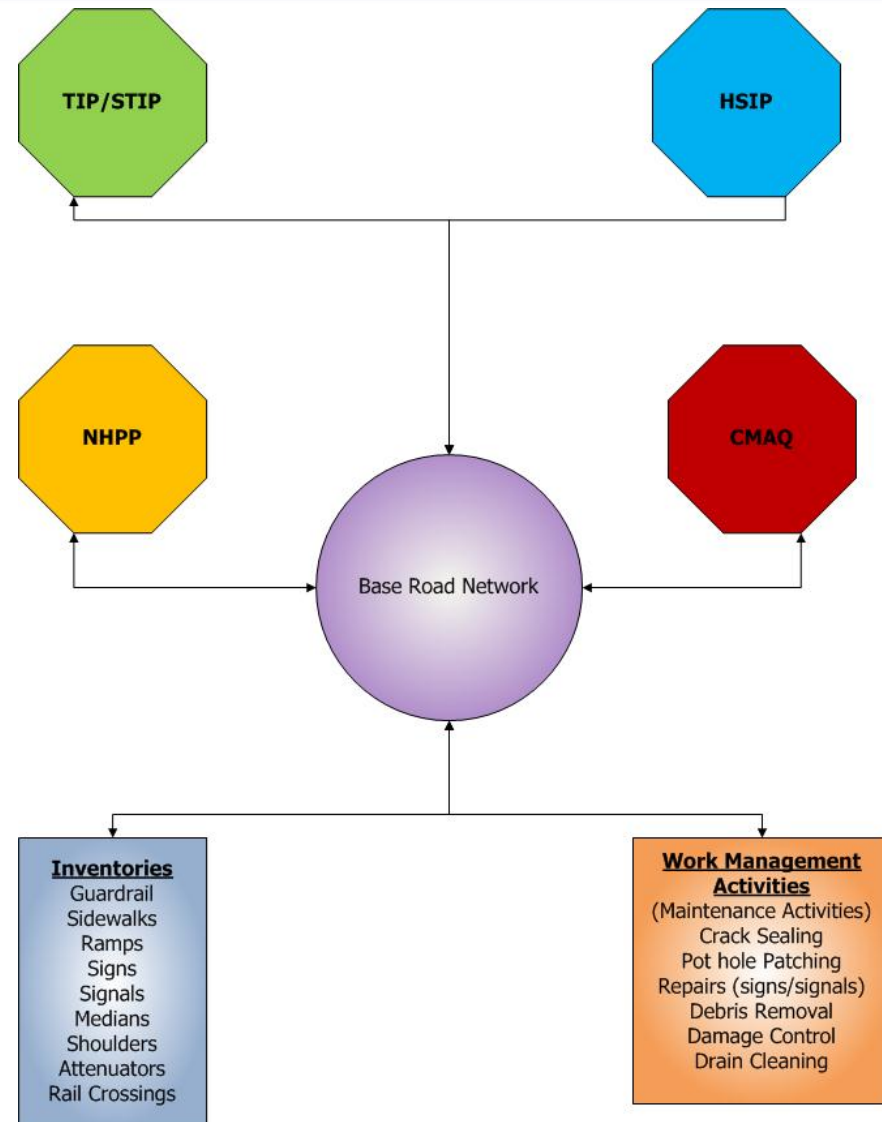
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**State and local
interdependence on
Centralized Base
Road Network**



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Federal interdependence on a Centralized Base Road Network



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- **Data accuracy**

- Three types of accuracy:
 - Attribution Accuracy (Absolute)
 - Locational Accuracy (Relative)
 - Network Accuracy (Completeness)



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■ Data accuracy

- Attribution Accuracy (Absolute)
 - "From Main St. to 1st Ave."
 - "From the east corp. line to the west corp. line."
- Location Accuracy (Relative)
 - .001 miles north of Reference Post 52.
 - 50 yards northeast of the centerline...
- Network Accuracy (Completeness)
 - The sum of all Functional Classes in Johnson County have to equal the total centerline mileage in Johnson County.



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■ Locating your data

- Latitude and longitude – not all devices are the same
- Street “A” to Street “B” – text is hard to search
- Route and log-mile – calibrating the route
- Directly on the map – click start, click end



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- **Historical linear accuracy**
 - Reported to 0.01 mile (± 26 ft)
 - Hand drawn maps for interpretation
 - DMI based database
- **Present linear accuracy**
 - Reporting to 0.001 mile (± 2.6 ft)
- **Potential for greater precision**



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- **Issues with increased precision:**
 - Implied accuracy as calculations now report with 16 decimal places!
 - Varying reporting device(s) and sources
- **Modeling the infinitely thin corporate limits and urban area boundaries**
- **Too many choices**



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- **Issues with using online maps:**
 - Not related to anything
 - Not a common format
 - No control of information



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